

We claim:

1. A culture of cells of a strain derived from a pathogenic parent strain of a species of *Neospora*, which cells exhibit attenuated pathogenicity compared to those of the parent strain but which are capable of triggering an immune response that protects a mammal against neosporosis when administered as a live vaccine.
2. The culture of claim 1, the cells of which are temperature-sensitive.
3. The culture of claim 1, wherein the species of the parent strain is *N. caninum*.
4. The culture of claim 3, wherein the parent strain of *N. caninum* is NC-1 which is present in MARC145 monkey kidney cells having ATCC accession No. CRL-12231.
5. The culture of claim 4, wherein the strain of attenuated cells is NCTS-8 which is present in MARC145 monkey kidney cells having ATCC accession No. CRL-12230.
6. A vaccine to protect a mammal against neosporosis, comprising an immunologically effective amount of live cells of a strain derived from a pathogenic parent strain of a species of *Neospora*, which cells exhibit attenuated pathogenicity compared to those of the parent strain but which are capable of triggering an immune response that protects the mammal against neosporosis when administered as a live vaccine, and a veterinarily acceptable carrier.
7. The vaccine of claim 6, wherein the attenuated cells are temperature-sensitive.
8. The vaccine of claim 6, wherein the species of the parent strain is *N. caninum*.

9. The vaccine of claim 8, wherein the parent strain of *N. caninum* is NC-1 which is present in MARC145 monkey kidney cells having ATCC accession No. CRL-12231.

5 10. The vaccine of claim 9, wherein the strain of attenuated cells is NCTS-8 which is present in MARC145 monkey kidney cells having ATCC accession No. CRL-12230.

10 11. The vaccine of claim 6, further comprising an adjuvant.

12. The vaccine of claim 11, wherein the adjuvant is an oil-in-water emulsion.

15 13. A method for preparing a culture of attenuated cells of a species of *Neospora* for use in a vaccine that protects a mammal against neosporosis, comprising modifying cells from a pathogenic parent strain of a species of *Neospora*; selecting and clonally propagating one or more modified cells that exhibit attenuated pathogenicity compared to cells of the parent strain; and selecting and clonally propagating one or more attenuated cells which are capable of triggering an immune response that protects the mammal against neosporosis when administered in a live vaccine.

20 14. The method of claim 13, in which the cells of the attenuated culture are temperature-sensitive.

25 15. The method of claim 13, wherein the species of the parent strain is *N. caninum*.

30 16. The method of claim 15, wherein the parent strain of *N. caninum* is NC-1 which is present in MARC145 monkey kidney cells having ATCC accession No. CRL-12231.

17. A method for preparing a vaccine to protect a mammal against neosporosis, comprising modifying cells from a pathogenic parent strain of a species of *Neospora*; selecting and clonally propagating those modified cells that exhibit attenuated

pathogenicity compared to cells of the parent strain but which are capable of triggering an immune response in the mammal that protects against neosporosis when administered in a live vaccine; and combining an immunologically effective amount of the attenuated cells with a veterinarily acceptable carrier in a form suitable for
5 administration as a live vaccine to the mammal.

18. The method of claim 17, wherein the attenuated cells are temperature-sensitive.

10 19. The method of claim 17, wherein the species of the parent strain is *N. caninum*.

20. The method of claim 19, wherein the parent strain of *N. caninum* is NC-1 which is present in MARC145 monkey kidney cells having ATCC accession No. CRL-
15 12231.

21. The method of claim 20, wherein the strain of attenuated cells is NCTS-8 which is present in MARC145 monkey kidney cells having ATCC accession No. CRL-
20 12230.

22. The method of claim 17, further comprising adding an adjuvant to the vaccine.

23. The method of claim 22, wherein the adjuvant is an oil-in-water emulsion.
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24. A method of vaccinating a mammal against neosporosis, comprising administering to the mammal an immunologically effective amount of a vaccine comprising live cells of a strain derived from a pathogenic parent strain of a species of *Neospora*, which cells exhibit attenuated pathogenicity compared to those of the parent
30 strain but which are capable of triggering an immune response that protects the mammal against neosporosis when administered as a live vaccine, and a veterinarily acceptable carrier.

25. The method of claim 24, wherein the attenuated cells are temperature-sensitive.

26. The method of claim 24, wherein the species of the parent strain is *N. caninum*.

27. The method of claim 26, wherein the parent strain of *N. caninum* is NC-1 which is present in MARC145 monkey kidney cells having ATCC accession No. CRL-12231.

28. The method of claim 27, wherein the strain of attenuated cells is NCTS-8 which is present in MARC145 monkey kidney cells having ATCC accession No. CRL-12230.

29. The method of claim 24, wherein the vaccine further comprises an adjuvant.

30. The method of claim 29, wherein the adjuvant is an oil-in-water emulsion.

31. The method of claim 24, wherein the mammal is selected from the group consisting of dogs, cows, goats, sheep and horses.

32. A combination vaccine, comprising an immunologically effective amount of live cells of a strain derived from a pathogenic parent strain of a species of *Neospora*, which cells exhibit attenuated pathogenicity compared to those of the parent strain but which are capable of triggering an immune response that protects the mammal against neosporosis when administered as a live vaccine; one or more other antigens that trigger an immune response that protects the mammal against a disease or a pathological condition; and a veterinarily acceptable carrier.